The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously presented) A method for detecting and identifying a bacterial toxin in a sample, the method comprises:

providing an array comprising a plurality of biological lipid membranes associated with a surface of a substrate in distinct microspots, the surface comprises a coating of an amine-presenting molecule, the biological lipid membranes comprise a mixture of a host lipid and a doped lipid deposited onto the surface, the doped lipid comprises a toxin-binding receptor;

incubating the array in a humid chamber to enable lateral redistribution of the lipids;

contacting the array with a solution comprising a bacterial toxin; and

monitoring for binding activity of at least one of the biological lipid membrane microspots with the bacterial toxin in the sample.

2. (Cancelled)

3. (Withdrawn – Previously presented) The method according to claim 2, wherein said toxin-binding receptor is a cell-surface protein.

4. (Previously presented) The method according to claim 1, wherein the toxin-binding receptor is a carbohydrate lipid or cholesterol.

5. (Previously presented) The method according to claim 4, wherein the carbohydrate lipid is a ganglioside, a ceramide, or a cerebroside.

6. (Withdrawn – Previously presented) The method according to claim 1, wherein the host lipid is a natural lipid, a synthetic lipid, or a lipid composition containing a mixture of different synthetic lipids.

7. (Withdrawn – Previously presented) The method according to claim 6, wherein said toxin-binding receptor is an ion channel.

8. (Withdrawn – Previously presented) The method according to claim 7, wherein the toxin-binding receptor is a sodium channel, a potassium channel, a calcium channel, and any combination of ion channels, an acetylcholine receptor, a ryanodine receptor, a glutamate receptor, a ceramide, a ganglioside, a cerebroside, sulfatides or cholesterol.

9. (Cancelled)

10. (Previously presented) The method according to claim 1, wherein the bacterial toxin has at least one constituent that is labeled.

11. (Previously Presented) The method according to claim 10, wherein the monitoring step comprises detecting for the presence of the label.

12. (Previously presented) The method according to claim 1, wherein the monitoring step comprises detecting directly a physical change due to the binding of the bacterial toxin to the biological lipid membranes.

13. (Previously presented) The method according to claim 1, wherein the bacterial toxin has no labeled constituent.

14. (Previously presented) The method according to claim 1, wherein the method employs a labeled toxin or a labeled known compound with an affinity to the toxin via binding to the toxin binding receptor recognition site of the toxin.

15. (Previously Presented) The method according to claim 1, the toxin detection sample can be a synthetic or natural toxin, or from a human, animal, plant, food, or environmental source.

16. (Original) The method of claim 1, wherein the substrate includes a glass, ceramic, metal-oxide, metal, non-metal, silicon, or polymer material.

17. (Previously Presented) The method according to claim 1, wherein the substrate is either nano- or micro-porous.

18. (Original) The method according to claim 1, wherein the substrate is configured as a bead, chip, a slide, a multiwell microplate, or a microcolumn.

19. – 26. (Canceled)

27. (Withdrawn) An array for identifying and detecting a toxin, the array comprising a plurality of biological membrane probes associated with a surface of a substrate; said biological membrane containing a toxin-binding moiety.

28. – 41. (Canceled)

42. (Previously presented) A method for detecting a binding event between a probe and target compound, the method comprising:

providing an array comprising a plurality of biological lipid membrane microspots associated with a surface of a substrate, wherein the surface comprises a coating of an amine-presenting molecule, and each of the biological lipid membrane microspots comprises a mixture of a host lipid and a doped lipid deposited onto the surface, wherein the doped lipid is a bacterial toxin-binding receptor;

incubating the array in a humid chamber to enable lateral redistribution of the lipids;

contacting a solution comprising a target compound with the array of biological lipid membrane microspots; and

detecting a binding event between at least one or more of the biological lipid membrane microspots with one or more constituents of the target compound.

43. (Previously Presented) The method of claim 42, wherein at least one of the constituents of the target compound is labeled and the detection step comprises detecting the presence of the label.

44. (Previously Presented) The method of claim 43, wherein the detection of the label is carried out by imaging based on fluorescence, phosphorescence, chemiluminescence, or resonance light scattering emanating from the bound target.

45. (Original) The method of claim 42, further comprising washing the substrate of unbound target prior to the detection step.

46. (Previously Presented) The method of claim 42, wherein the array of biological lipid membrane microspots is incubated with a labeled target compound and an unlabeled target compound, and the binding event between the unlabeled target compound and the probe is determined by measuring a decrease in the signal of the label due to competition between the labeled target and the unlabeled target compound for the probe.

47. (Original) The method of claim 42, wherein the target is unlabeled and the binding event is determined by a change in physical properties at the interface.

48. (Original) The method of claim 47, wherein the change in physical properties at the interface is a change in refractive index or electrical impedance.

49. (Previously presented) A method for identifying and detecting a toxin in a sample, the method comprising:

applying a composition as a plurality of microspots to a surface of a substrate to form an array comprising a plurality of biological lipid membrane microspots, the composition comprising one or more lipid molecules and one or more toxin-binding receptors, the surface comprising a coating of an amine presenting molecule;

forming a second array comprising a plurality of biological lipid membrane microspots;

contacting a sample comprising a known toxin with the array of biological lipid membrane microspots;

contacting a sample comprising an unknown toxin with the second array of biological lipid membrane microspots;

detecting the binding pattern of the known toxin to obtain a signature of the known toxin;

detecting the binding pattern of the unknown toxin; and

comparing the binding pattern of the unknown toxin with that of the known toxin to identify and detect the presence of a toxin in the sample.

50. (Previously Presented) The method of claim 49, wherein the sample is a biofluid from a specific infectious tissue, a solution from food or environmental sources, or an aqueous solution comprising chemical toxins collected or concentrated from a contaminated gaseous medium.

51. (Previously Presented) The method according to claim 1, wherein the amine-presenting molecule is γ-aminopropylsilane.

52. (Previously Presented) The method according to claim 1, wherein the amine-presenting molecule is selected from the group consisting of poly-lysine, polyethyleneimine, and chitosan.

53. (Previously Presented) The method according to claim 42, wherein the amine-presenting molecule is γ-aminopropylsilane.

54. (Previously Presented) The method according to claim 42, wherein the amine-presenting molecule is selected from the group consisting of poly-lysine, polyethyleneimine, and chitosan.

55. (Previously Presented) The method according to claim 49, wherein the amine-presenting molecule is γ-aminopropylsilane.

56. (Previously Presented) The method according to claim 49, wherein the amine-presenting molecule is selected from the group consisting of poly-lysine, polyethyleneimine, and chitosan.

57. (Previously presented) A method for detecting a binding event between a receptor in a biological lipid membrane and a target compound, said method comprising:

applying a composition as a plurality of microspots to a surface of a substrate, the composition comprising one or more lipid molecules, the surface comprising a coating of an amine presenting molecule;

incubating the substrate in a composition comprising toxin-binding moiety to form an array comprising a plurality of biological lipid membrane microspots;

incubating the array in a humid chamber to enable lateral redistribution of the lipid molecules;

contacting a solution comprising the target compound with the array; and

detecting a binding event between one or more receptors in the biological lipid membranes and one or more constituents of the target compound.

58. (Previously Presented) The method of claim 57, wherein the coating consists of a coating of the amine-presenting molecule.

59. (Previously Presented) The method of claim 58, wherein the amine-presenting molecule is selected from the group consisting of γ-aminopropylsilane, polyamine, and chitosan.

60. (Previously Presented) The method of claim 57, wherein the coating comprises a coating of the silane.

61. (Previously Presented) The method of claim 60, wherein the silane comprises a hydroxyl, a carboxyl, a phosphate, a sulfonated, or a thiol group.

62. (Previously presented) A method of forming a toxin-binding microspot array, the method comprising:

applying a composition as a plurality of microspots to a surface of a substrate, the composition comprising one or more lipid molecules, wherein at least one of the lipid molecules is a toxin-binding receptor, the surface comprising a coating of an amine presenting molecule; and

incubating the array in a humid chamber to allow lateral redistribution of the lipid molecules.

63. Cancelled

64. (Previously presented) The method according to claim 62, wherein the toxin-binding receptor is a bacterial toxin binding receptor.

65. Cancelled

66. (Previously Presented) The method according to claim 1, wherein the lipids have a mobile fraction of about 0.5.